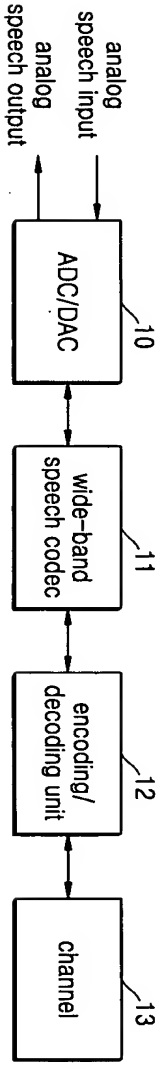

analog speech input
analog speech output
ADC/DAC
10
wide-band speech codec
11
encoding/ decoding unit
12
channel
13

FIG. 1

FIG. 2

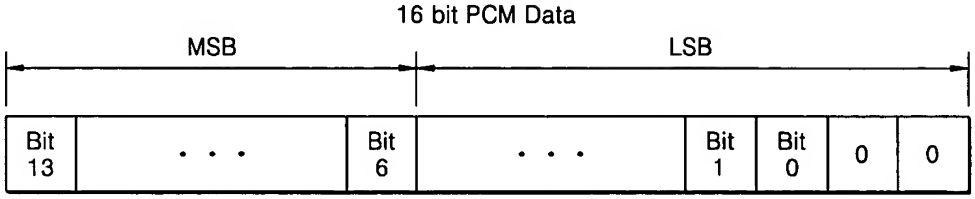


FIG. 3

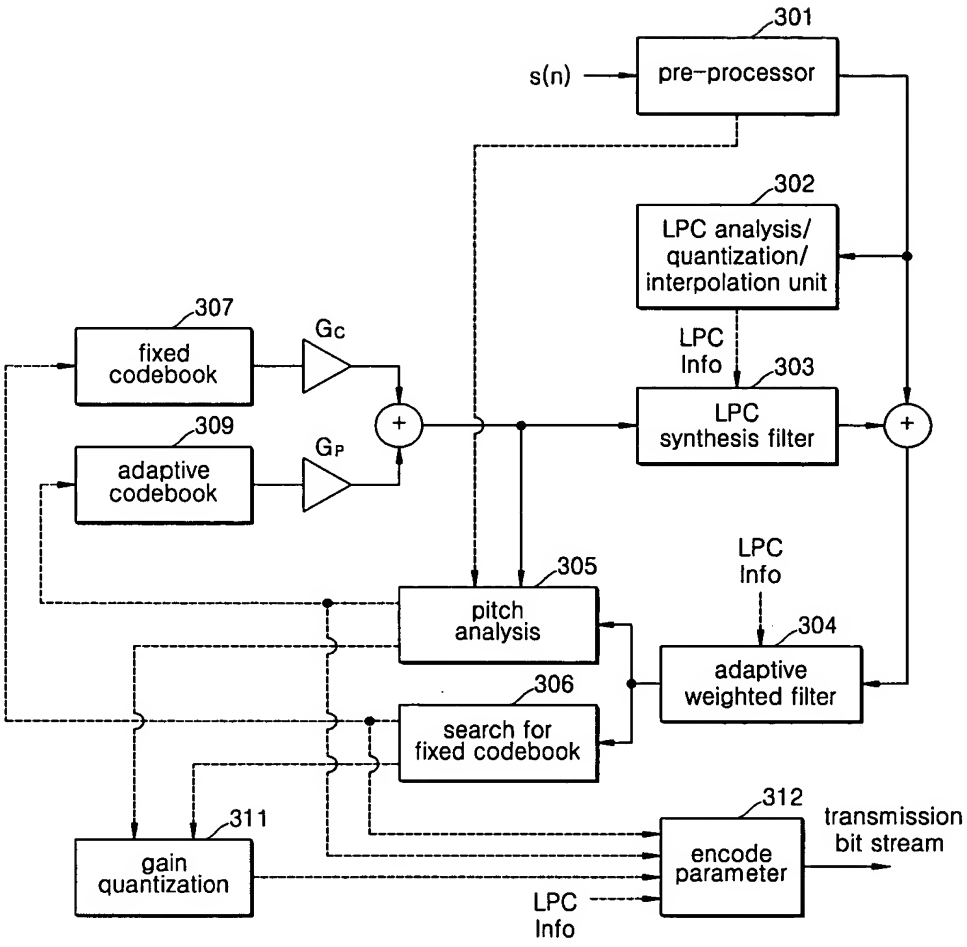

301
s(n)
pre-processor
302
LPC analysis/ quantization/ interpolation unit
LPC Info
303
LPC synthesis filter
307
fixed codebook
Gc
309
adaptive codebook
GP
305
pitch analysis
LPC Info
304
adaptive weighted filter
306
search for fixed codebook
311
gain quantization
312
encode parameter
transmission bit stream
LPC Info

FIG. 4

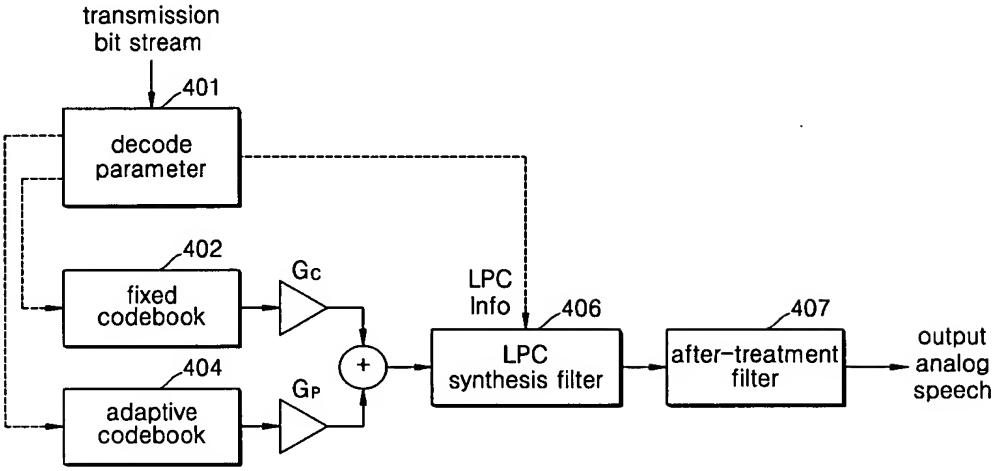
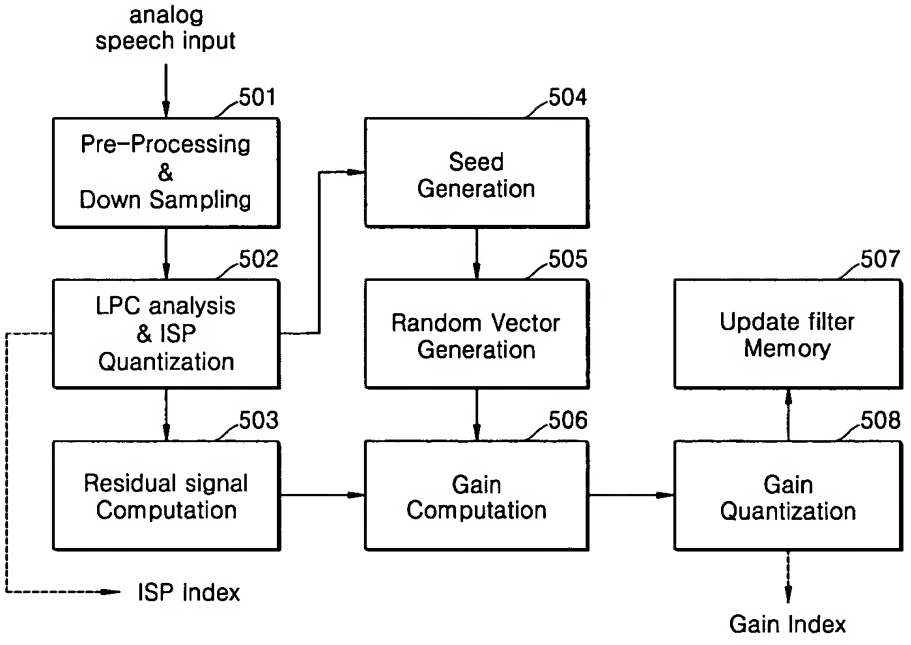

transmission bit stream
401
decode parameter
402
fixed codebook
Gc
404
adaptive codebook
GP
+
LPC Info
406
LPC synthesis filter
407
after-treatment filter
output analog speech

FIG. 5


analog
speech input
501
Pre-Processing
&
Down Sampling
502
LPC analysis
& ISP
Quantization
503
Residual signal
Computation
ISP Index
504
Seed
Generation
505
Random Vector
Generation
506
Gain
Computation
507
Update filter
Memory
508
Gain
Quantization
Gain Index

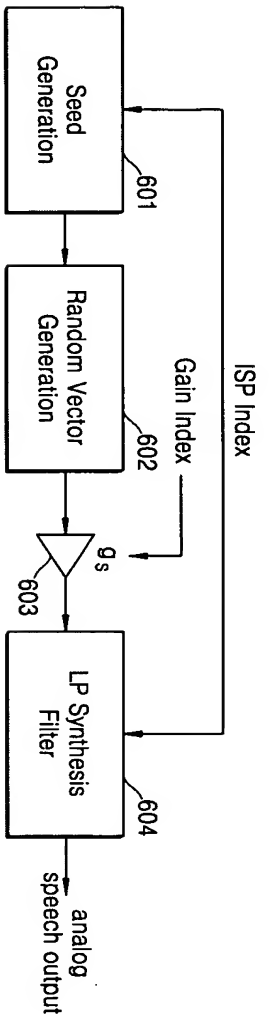

Seed Generation
601
Random Vector Generation
602
Gain Index
ISP Index
g_s
603
LP Synthesis Filter
604
analog speech output

FIG. 6

FIG. 7

Rate	Parameter	1st subframe	2nd subframe	Total per frame
1.0 kbps	ISP			14 bit
	Gain	3	3	6 bit
	Total			20bit

FIG. 8

```
tmp=lpc_ind[0];     ---------①
tmp=lpc_ind[1];     ---------②

tmp0=tmp0<<8;       ---------③
seed0=(Word16)(tmp0^tmp1);      ---------④

tmp1=tmp1<<8;       ---------⑤
seed 1=(Word16)(tmp0^tmp1);     ---------⑥

if(seed1>seed0)     ----------⑦
            seed0=seed1;    ----------⑧

return seed0;
```

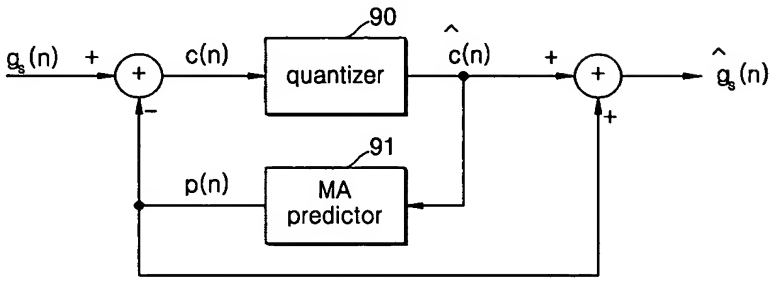



FIG. 9